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The United States of America



Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person or persons having title to this patent the right to exclude others from making, using or selling the invention throughout the United States of America for the term of seventeen years from the date of this patent, subject to the payment of maintenance fees as provided by law.

Buce Tehran

Commissioner of Patents and Trademarks

Dandra J. Mortan

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NOTICE

5,023,*777* 5,129,070

Dorotte Sawamoto 4,868,740

7/1987 7/1989 9/1989

Gotou et al. Morton Kagimasa

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4,361,868 4,445,173 4,604,695 4,679,140 4,852,048

months after the date of this grant, or within a grace period of six months thereafter upon are due three years and six months, seven years and six months, and eleven years and six If the application for this patent was filed on or after December 12, 1980, maintenance fees

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EXTENDING COMPUTER ARCHITECTURE FROM 32-BITS TO 64-BITS BY USING THE MOST SIGNIFICANT BIT OF THE STACK POINTER REGISTER TO INDICATE WORD SIZE

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Powell et al.

United States Patent [19]

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.S. PA7 5/1973 11/1982 4/1984 8/1986 7/1987	-	f Searc			Relate nuation ontinuat		No.:	gnee:	Inventors:
U.S. PATENT DOCUMENTS 5 5/1973 Balogh, Jr. et al	References Cited	Field of Search	364/DIG. 1; 364/DIG. 2; 364/255.1; 364/254.9; 364/243; 364/948.1: 364/958.5;	Int. C1.6	Related U.S. Application Data Continuation of Ser. No. 146,433, Oct. 29, 1993, which is a continuation of Ser. No. 632,017, Dec. 21, 1990.	Oct. 11, 1994	Appl. No.: 321,459	Sun Microsystems, Inc., Mountain View, Calif.	Michael Powell, Palo Alto; Robert Cmelik, Sunnyvale; Shing Kong, Mountain View; David Ditzel, Los Altos Hills; Edmund Kelly, San Jose, all of Calif.
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[11] Patent Number:

5,430,864

[45] Date of Patent:

Jul. 4, 1995

Powell et al.

[54] EXTENDING COMPUTER ARCHITECTURE FROM 32-BITS TO 64-BITS BY USING THE MOST SIGNIFICANT BIT OF THE STACK POINTER REGISTER TO INDICATE WORD SIZE

United States Patent [19]

[75] Inventors: Michael Powell, Palo Alto; Robert

Cmelik, Sunnyvale; Shing Kong, Mountain View; David Ditzel, Los Altos Hills; Edmund Kelly, San Jose,

all of Calif.

[73] Assignee: Sun Microsystems, Inc., Mountain

View, Calif.

[21] Appl. No.: 321,459

[22] Filed: Oct. 11, 1994

Related U.S. Application Data

[63] Continuation of Ser. No. 146,433, Oct. 29, 1993, which is a continuation of Ser. No. 632,017, Dec. 21, 1990.

[£1]	Int. Cl.6	G06F 12/04
[51]	U.S. Cl.	395/500; 395/800;
[32]	364/131G;. 1: 304	/DIG. 2; 304/233.1,
	364/254.9; 364/243; 3	64/948.1; 364/958.5;
	304, 23 113, 20 1, 2 11,	364/970.3
[58]	Field of Search	395/500, 800

[50] 1100 01 05-7-

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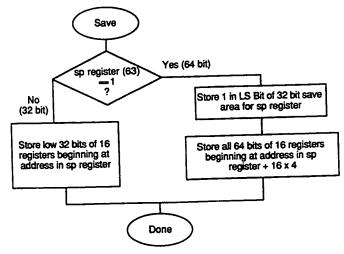
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Primary Examiner—Parshotam S. Lall
Assistant Examiner—Timothy L. Philipp
Attorney, Agent, or Firm—Blakely, Sokoloff, Taylor &
Zafman

[57] ABSTRACT

The present invention enables a computer system to store from register files to memory, and restore from memory back to the register files, data from programs designed to operate in accordance with a first word size, as well as programs designed to operate in accordance with a second word size. This is accomplished without an increase in hardware and without requiring modification of existing software. In particular, an indication is utilized at the procedure level to designate whether a particular procedure is using words of a first or second word size. Preferably, this indication is placed in a first predetermined bit position in the stack pointer of the procedure. When a save occurs, certain contents from the register file are saved to memory along with the stack pointer. Under certain circumstances, the word size indication is moved to a second predetermined bit position within the stack pointer which is stored in a predesignated stack pointer address in the save area. When the contents are restored from memory, back to the register file, the indication is reviewed in the stack pointer address and serves to determine the word size of the procedure being restored.

16 Claims, 3 Drawing Sheets



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